that process, and is not continuous with that of the other side. Body compressed posteriorly, covered with soft, rather loose skin. Pectorals rounded, the middle rays longest, extending beyond the vent. Ventrals very short, situated below the middle of the base of the pectorals, and at a distance from one another of rather more than the length of the fin; the base of each is surrounded by a fold of loose skin. Dorsal and anal opposite one another, situated far back on the tail, almost entirely enveloped in skin. Caudal rounded. Vent situated rather nearer the origin of the anal than the root of the ventrals.

Dark greyish brown, irregularly spotted with white.

Total length 8 inches, length of head 2·5, breadth of head 2·5, height of body 2.

Hab. Dunedin and Bluff harbours.

Trygon brevicaudata.

Trygon thalassia (?), Hutton, Cat. Fish. N. Z. p. 85, nec Columna.

Female. Disk rather broader than long, the anterior margins forming a very obtuse angle, which is interrupted by a short projection of the snout. Body smooth, with a single small oval tubercle in the centre of the back. Tail not longer than the body, with a cutaneous fold along the lower side, but no upper ridge; armed with two serrated spines, the anterior one the smaller, and in front of these a row of large ossifications; sides of the tail with smaller stellate ossifications.

Brown above, whitish below.

Length of disk 44 inches, breadth 48; tail 32+ inches.

Hab. Dunedin Harbour.

The end of the tail of this specimen is broken off; but it is evident that it could only have extended a few inches further.

XLII.—*On a new Genus and Species of Trap-door Spider from South Africa.* By the Rev. O. P. Cambridge, M.A., C.M.Z.S., &c.

[Plate X.]

In the 'Field' of October the 10th, 1874, there appeared an account of a trap-door spider whose nest is formed in the bark of trees. Not long since examples of the nest (in one of which was a female of the spider) were forwarded to me, with a request that I would write a short notice of them for the 'Field;' a brief account of the genus and species was accord-

ingly published in that newspaper on the 28th of August, 1875 (vol. xlvi. p. 257). The present article contains a full description of this interesting spider, of which both the genus and the species appear to me to be new to science. The name (*Moggridgea*) conferred upon the new genus will, I feel sure, commend itself to those who have read the able work on Trap-door Spiders written by the late Mr. J. Traherne Moggridge; and in thus connecting this interesting new genus with the name of my kind and lamented friend, I desire to give my sincere testimony to the great value and importance of his too early interrupted observations on the habits of spiders of the trapdoor-nest-building group.

Family **Theraphosides**.

Gen. nov. MOGGRIDGEA.

Generic characters.

Cephalothorax broad-oval, truncated before; caput not elevated beyond a general curved slope from the hinder part.

Eyes eight, in the usual four pairs, forming (when looked at from above and behind) a large, somewhat **W**-shaped figure; those of each lateral pair are widely separated; the four lateral eyes describe a transverse oblong figure whose front side is longer than the hinder one, the latter being double the length of the line formed by each lateral pair.

Legs short, strong; the tibiæ and metatarsi of the first and second pairs of a broad flattened form, armed on either side near the underpart with strong spines: each tarsus ends with three curved claws springing from a small claw-joint; the superior pair strong, and furnished with one or two teeth, the inferior claw small; no scopula on any of the tarsi.

Falces destitute of spines at their fore extremity on the upperside.

Maxillæ short, strong, very divergent, cylindrical, with only a small prominent point at their inner fore extremity.

Labium short, but somewhat pointed at the apex; the greater part of the front (both of the labium and maxillæ) thickly studded with small tooth-like spines.

This genus is allied to *Cteniza* and *Nemesia*, but differs from both in having no spines on the falces; from the former it differs in the comparatively low caput, and from the latter in the wide separation of the eyes of each lateral pair. Like the spiders of those genera, the present forms a tubular nest closed with a hinged valve or lid.

Moggridgea Dyeri, sp. n.

Adult female, length $4\frac{2}{3}$ lines; length of cephalothorax $2\frac{1}{4}$ lines; breadth of cephalothorax, in the thoracic region, nearly 2 lines; breadth of caput, at the fore margin, $1\frac{3}{4}$ line.

The *cephalothorax* has a very slightly and gradually curved slope from the eyes to the hinder margin, so that the caput does not rise abruptly from the thorax as in *Cteniza* and many spiders of the genus *Nemesia*; the thoracic junction is marked by a small but deepish subangular indentation, the angle directed forwards; the oblique indentation on either side of the caput, next to the thorax, is pretty strong, the thoracic indentations slight: the surface of the cephalothorax is smooth, glossy, and of a deep brownish black colour; a few long bristly hairs stand up, nearly erect, from the ocular area; and two long ones, in a transverse line, are directed a little forwards from a point close to the thoracic junction: the height of the clypeus does not much exceed the longest diameter of the fore lateral eyes; immediately in front of each of these latter is a deepish curved indentation, the curve of which is directed forwards.

The *eyes* are rather small; they may be described as in the four usual pairs, or else in two transverse curved rows, the curves opposed to each other, forming very nearly the figure of the letter **W**: the fore lateral eyes are the largest of the eight, seated on tubercles, and rather of an oval form; each of these is separated from the fore central eye on its side by an interval a little exceeding its own longest diameter, and in front of each, rather on the inner side, is a strongish curved indentation; the fore centrals are round and separated by rather more than a diameter's distance from each other, and close behind them is a small transverse indentation: the hind lateral eyes are also seated on slight tubercles, and each, with the fore lateral and fore central eye on its side, forms very nearly an equilateral triangle; the hind central eyes are of somewhat irregular shape, smallest of the eight, of a shining pearly lustre, and very near (but not quite contiguous) to the hind laterals.

The *legs* are short and strong; they do not differ greatly in length, their relative length being 4, 1, 2, 3; they are of a dark brown colour tinged with olive, the basal joints being the lightest, the outer and under sides of the metatarsi of the second pair, however, are nearly white: the tarsi and metatarsi of the first and second pairs are broad and flattened on the under or lower sides; each lateral margin of the lower side is armed with a series of strong, slightly curved spines

articulated to tubercles: the femora, especially of the first and second pairs, are strongly curved and hollowed or flattened inside: all the legs are furnished with hairs and bristles; of the latter there is a small group or tuft of prominent ones under the femoral joints of each of the first, second, and fourth pairs of legs, and the basal joints of each of the first three pairs has a patch of small, prominent, red-brown tooth-like spines at its base, close to the hinder angle: the tarsi end with two superior, strong, curved claws, each with a single strongish unidenticulate tooth towards its base on the underside, and an inferior curved claw, short, and of a nearly conical form; these terminal claws spring from a small supernumerary or claw-joint; the tarsi of the first two pairs are very short, not much exceeding half the length of those of the third and fourth pairs; and none of them is furnished with a scopula.

The *palpi* are strong, moderately long, similar in colour to the legs, and furnished with hairs and bristles; the humeral joints are much bent and flattened on their inner sides; the digitals are shorter, and less strong, than the radial joints, and each terminates with a curved unidenticulate claw.

The *falces* are strong and massive, but moderate in length and not very prominent; they are similar to the cephalothorax in colour, but have no spines at the fore extremity on the upperside.

The *maxillæ* are not very long, but strong, cylindrical, and very divergent; each has its fore extremity on the inner side rather subangularly prominent; and the greater part of their exterior surface is pretty thickly studded with small red-brown, tooth-like, prominent spines, rather stronger, but of a similar nature to those on the basal joints of the legs; the colour of the maxillæ is a reddish yellow-brown.

The *labium* is rather small, of a somewhat curviangular form at its apex, a little constricted towards its base, and marked off from the sternum by a strongish transverse, slightly curved indentation; its colour is similar to that of the maxillæ, and the outer surface of the upper half is, like them, also studded with similar, but rather stronger denticulations.

The *sternum* is large, flat, of a somewhat oval form, and increases gradually in width from the labium to its hinder extremity; its colour is a yellowish brown, tinged with olive.

The *abdomen* is of moderate size, pretty convex above, projects considerably over the base of the cephalothorax, and is of a purplish brown colour; its surface has a somewhat coriaceous and rugulose appearance; it is thinly clothed with hairs, and is pretty thickly studded above and on the sides with small roundish tubercles, some of which have a shining appearance,

and from many of them there issues a single long, prominent, tapering bristle; the rugulosities of the surface are marked by being paler than the rest, but they do not present any definite pattern: the spinners are four in number; those of the superior pair are strong but very short, especially the second and third joints, which are but just perceptible; those of the inferior pair are small, tapering, one-jointed, and near together: the spiracular plates are of a pale brownish yellow colour; and the underside of the abdomen is of a paler hue than the upperside.

A single example of this very distinct spider, accompanied by several nests, was received (through the entomological editor of the 'Field' newspaper) from South Africa.

The nest is a tubular one, formed in the crevices and rugulosities of the bark of the oak tree; it scarcely exceeds an inch and a half in length; and it is closed externally by a hinged lid, of about 4–5 lines diameter. The exposed surface of the tube, as well as the lid, is covered with small particles of outer bark, and thus exactly resembles the bark itself. The lid is peculiar in combining both the separate types observed in the trap-door nests of Europe, and described in 'Harvesting Ants and Trap-door Spiders' by the late Mr. Moggridge—that is, the *cork* and *wafer* types; it has its central portion thicker than the rest; this part shuts into the circular entrance of the tube; and its thinner rim closes over the edge, entirely concealing the nest. The form of the lid is round or sometimes slightly oval; and it seems to be placed at the upper end of the tube—*i. e.* the tube running downwards* in the bark. This, however, is not certain, since there was nothing in the detached pieces of bark received to show conclusively in what direction they grew; so it is possible that the tube may run upwards: this latter would perhaps better insure the keeping close of the lid, since the opening of the tube is oblique, and the lid when closed lies very nearly in the same plane as the surrounding level of the bark. Direct evidence, however, is wanted upon this point.

I have taken the liberty to connect the name of its discoverer (Dr. Dyer, of Uitenhage, South Africa) with this spider, the finding of which must be hailed as an important addition to our knowledge of trap-door spiders. Hitherto all known spiders, of the trapdoor-forming habit, have their tubes made in holes in the earth; and (no doubt to assist in excavating

* In a notice of this spider in the 'Field,' August 28, 1875, it is stated that the tube appears to run upwards; but subsequent examination of the pieces of bark &c. leads me now to question this.

them) the upper fore extremity of their falces is furnished with strong spines. In the present spider, whose nest is made in channels already existing, the crevices and rugulosities of the bark of trees, there is no need of such spines; and their absence is thus accounted for. An interesting speculation suggests itself here, *i. e.* whether the present spider is prior or subsequent in point of genealogical relationship to the trap-door spiders that form a nest in the earth, and are specially furnished with spines on the falces to excavate the holes for it. It is, it seems to me, most conceivable that spiders should first take advantage of sites already suited for their habitations, and that subsequently the species fitted for forming their own sites should be gradually developed.

EXPLANATION OF PLATE X.

Fig. 1. *a*, spider, enlarged; *b*, ditto, in profile, without legs or palpi; *c*, eyes, from above and behind; *d*, underside of cephalothorax, showing maxillæ, labium, sternum, and basal joints of the legs; *e*, tarsus of one of the second pair of legs; *f*, natural length of spider.

Fig. 2. A, nest in piece of bark; B, another nest in groove of a piece of wood; C, lid of nest detached, showing the inner side.

XLIII.—*On the true Nature of the so-called* "Bathybius," *and its alleged Function in the Nutrition of the Protozoa.* By G. C. Wallich, M.D.

At no previous period in the history of deep-sea research had a more boldly conceived, but, as I venture to think, more untenable doctrine, been offered for acceptance by the scientific public, than when the alleged discovery of this extraordinary Protozoon was formally announced by Prof. Huxley.

In 1868 this distinguished biologist published an elaborate paper "On some Organisms from great depths in the North Atlantic," in which he expressed the opinion that certain masses of protoplasmic matter, found in specimens of deep-sea mud which had been submitted to him for examination in 1857, constitute a new phase of living being, to which he gave the name of "*Bathybius*." In referring to this subject in their first "Preliminary Report on Deep-sea Dredgings," published just afterwards in the 'Proceedings of the Royal Society,' viz. in Dec. 1868, Drs. Carpenter and Wyville Thomson say that "the examination which Prof. Huxley has been good enough to make of the peculiarly viscid mud brought up in our last dredging at the depth of 650 fathoms,